

# HYDROGEOPHYSICS

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**Edited by:**

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The shallow subsurface of the earth is an extremely important geological zone, one that yields much of our water resources, supports our agriculture and ecosystems, serves as a repository for waste and contaminants, and influences our climate. The field of hydrogeophysics has developed in recent years to investigate the potential that geophysical methods hold for providing quantitative information about hydrogeological parameters or processes in this important zone. This book is the first to cover the fundamentals of hydrogeophysics from both the hydrogeological and geophysical perspectives. The book has multiple chapters that are authored by leading experts or expert groups. The book is divided into four key parts:

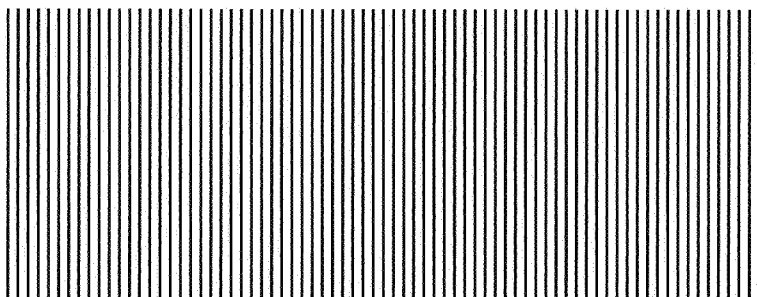
- The fundamentals of hydrological characterization are described in two chapters that focus on hydrological data acquisition and measurement analysis as well as geostatistical approaches;
- The fundamentals of geophysical characterization are described in eight chapters in the book. These chapters describe geophysical techniques that are often used for hydrogeological characterization, including electrical, controlled source electromagnetic, ground penetrating radar, seismic, well logging, and remote sensing methods, as well as petrophysical relationships. Unlike other books, the geophysical methods and petrophysical discussions presented in this book emphasize the theory, assumptions, approaches, and interpretations that are particularly important for hydrogeological applications.
- A series of hydrogeophysical case studies, whose scale of investigation ranges from the lab-scale to the regional-scale, are described in four chapters. These case studies illustrate hydrogeophysical approaches for mapping hydrological units, estimation of hydrogeological parameters, and monitoring of hydrogeological processes.
- Hydrogeophysical frontiers are covered in two chapters, which focus on emerging technologies and stochastic hydrogeophysical inversion approaches.

**A list of the chapter titles and authors is given at:**

**<http://esd.lbl.gov/people/shubbard/vita/webpage/textbook2.html>**

*Hydrogeophysics* is intended to provide an introduction to students and to new researchers to the field, to be used as a resource for researchers already active in the field, and to serve as a springboard for advances in the field that are needed to improve our understanding and management of the earth's shallow subsurface.

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